

PATENT SPECIFICATION

NO DRAWINGS

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COMPLETE SPECIFICATION

Temperature Indicating Paints

We, G. V. PLANER LIMITED, a British company, of Windmill Road, Sunbury-on-Thames, Middlesex, do hereby declare the invention for which we pray that a patent may be granted to us, and the method by which it is to be performed, to be particularly described in and by the following statement:—

This invention relates to paints suitable for indicating temperatures. In accordance with conventional methods such paints may rely on the change in crystalline structure of an organic or inorganic compound (the melt sensitive component) dispersed in the paint, at a given temperature. By suitable choice of organic compounds with different melting points, paints suitable for indication of a range of temperatures can be derived. The disadvantage of such systems is however the difficulty in clearly recognising the relatively small visual changes occurring the crystal structure before and after melting of the material.

It is an object of this invention to overcome these difficulties, and to provide temperature indicating paints affording more precise and easily recognisable indication of the melt temperature. In accordance with the invention, a temperature indicating paint comprises as the melt sensitive component an organic or inorganic compound, as well as a dye and/or a fluorescent material which is soluble in said melt sensitive component when the latter is molten. In this way an unequivocal visual change occurs upon melting of the melt sensitive component, viz. in the nature of a colour change in the case of the said dye, or in the nature of a change to a fluorescent appearance, e.g. in ultraviolet light, in the case of the said fluorescent material. In the preparation of such paints, a liquid vehicle, e.g. water or an organic material, is normally used,

which is eliminated for instance by volatilisation, when the paint is applied to an object for temperature indication; in addition, the paint may comprise an insoluble pigment to enhance the change in appearance at the indicating temperature and/or for ready identification of the paint, as well as a binder constituent dissolved or dispersed in said liquid vehicle, for instance a phenolic, silicon or epoxide resin, to promote adhesion of the paint to the object to which it is applied.

According to one method of preparation of such paints, an organic dye is milled with an organic melt sensitive component, for instance in the ratio of 1 part to 10 parts by weight respectively, the mixture being then sieved, e.g. through a 200 mesh sieve. A suitable liquid vehicle, e.g. in the proportion of 2 cc to 1 g of solids, with or without addition of a resin binder, is then added to formulate the paint. A small quantity, e.g. about 0.1 percent by weight, of an inorganic pigment may further be added. The paint may then be applied for example by painting, spraying or dip-coating, to the object the temperature of which is to be monitored, followed normally by heating to remove the liquid vehicle and when present cure the resin. In addition, it is sometimes desirable, in order to further increase the adhesion of the melt indicating paint, and to afford environmental protection for the latter, to superpose upon the applied paint layer a thin, effectively transparent coating of a resin. By way of example, the melt sensitive component may consist of phenacetin to give a melt indication at 157°C. The liquid vehicle may be petroleum ether, the inorganic pigment "Permanent Blue" and the dye Nigrosine. A small proportion of a suitable resin binder may be added to promote adhesion of the

paint. In this example on melting the basic colour is changed from blue to black.

According to another example, the melt sensitive component is palmitic acid for temperature indication at 60°C. A fluorescent material is incorporated in place of the dye in the previous example, for example UMBELLIFERONE. The pigment is Permanent Blue and the liquid vehicle water. Here the paint is substantially non-fluorescent as prepared, changing however to a fluorescent appearance in ultra-violet light irradiation upon melting of the melt sensitive component.

In both examples the changed appearance after melting remains permanent upon subsequent cooling of the paint to room temperature.

Paints in accordance with the invention are particularly suitable for application to electrical components, where they are capable of providing a permanent record of maximum surface temperatures attained by such components during normal operation, in the course of electrical load test or the like.

WHAT WE CLAIM IS:—

1. A temperature indicating paint com-

prising a melt sensitive component and a dye and/or fluorescent material, said temperature indicating paint being capable of undergoing a change in appearance in the vicinity of the melting point of said melt sensitive component, as a result of dissolution of said dye and/or fluorescent material in said melt sensitive component.

2. A temperature indicating paint according to claim 1, wherein said change involves a transition from substantially non-fluorescent to fluorescent appearance of the paint when viewed in ultra-violet light.

3. A temperature indicating paint according to any of claims 1 or 2, comprising a pigment.

4. A temperature indicating paint according to any of claims 1 to 3 comprising a liquid vehicle.

5. A temperature indicating paint according to any of claims 1 to 4, comprising a resin binder.

6. A temperature indicating paint according to claim 5, wherein said resin binder is a phenolic, silicone or epoxide resin.

G. V. PLANER LIMITED.